AMENDMENTS TO THE CLAIMS

1. (canceled)

2.(currently amended):   A noise canceling method comprising the steps of:

periodically inserting a zero-point into a signal on a transmission side,

establishing synchronization based on a received signal,

extracting the zero-point based on the established synchronization and interpolating a

noise component of the received signal by using the zero-point on a reception side, and

subtracting the noise component from the [[a]] received signal.

3.(previously presented):   The noise canceling method as claimed in claim 2, wherein

one or more zero-points are inserted at intervals of an integer number of samples.

4.(previously presented):   The noise canceling method as claimed in claim 3, wherein an

inserted number of the zero-points is determined by deciding a signal quality on the reception

side to be notified to the transmission side.

5.(previously presented):   The noise canceling method as claimed any one of claims 2 to

4 wherein a transmission line of the received signal includes a transparent transmission line.

6.(previously presented):   The noise canceling method as claimed in claim 5, wherein

2

the transparent transmission line includes a Nyquist transmission line.

7.(previously presented): The noise canceling method as claimed in 2 wherein the step of interpolating includes steps of performing a frequency shift of the received signal to a desired frequency bandwidth, decimating according to the zero-point, performing an interpolation, and finally performing the frequency shift in a reverse direction so as to adjust to the original signal, thereby generating the noise component of the received signal.

8.(previously presented): The noise canceling method as claimed in claim 7, wherein for the step of interpolating, the zero-point is inserted into the decimated signal, and a low-pass filter process for making an interpolation bandwidth a transmission bandwidth is further performed.

9.(previously presented): The noise canceling method as claimed in claim 8, wherein the low-pass filter process includes a cos-squared filter process for making the interpolation bandwidth a Nyquist bandwidth.

10.(previously presented): The noise canceling method as claimed in claim 8, wherein the low-pass filter process includes a cos filter process for making the interpolation bandwidth a Nyquist bandwidth.

11.(previously presented): The noise canceling method as claimed in claim 7, wherein a frequency bandwidth, in which a noise frequency component is large, is detected in the received

3

signal so that the amount of the frequency shift is automatically determined for the desired frequency bandwidth.

12.(previously presented): The noise canceling method as claimed in any one of claims 2 to 4 wherein an automatic equalizing process is further performed so as to remove an intersymbol interference at a former or latter stage of a noise cancelation.

13. (canceled):

14.(currently amended): A noise canceling apparatus comprising:

means ~~for~~ periodically inserting a zero-point into a signal on a transmission side,

<u>means establishing synchronization based on a received signal,</u>

means ~~for~~ <u>extracting the zero-point based on the established synchronization and</u> interpolating a noise component of <u>the</u> [[a]] received signal ~~by using the zero-point on a reception side~~, and

means for subtracting the noise component from the received signal.

15.(previously presented): The noise canceling apparatus as claimed in claim 14, wherein one or more zero-points are inserted at intervals of an integer number of samples.

16.(previously presented): The noise canceling apparatus as claimed in claim 15, wherein an inserted number of the zero-points is determined by deciding a signal quality on the reception side to be notified to the transmission side.

4

17.(previously presented): The noise canceling apparatus as claimed in any one of claims 14 to 16 wherein a transmission line of the received signal includes a transparent transmission line.

18.(previously presented): The noise canceling apparatus as claimed in claim 17, wherein the transparent transmission line includes a Nyquist transmission line.

19.(previously presented): The noise canceling apparatus as claimed in claim 14 wherein the means for interpolating include means for performing a frequency shift to the received signal to a desired frequency bandwidth, means for decimating according to the zero-point thereafter, means for further performing an interpolation, and means for performing the frequency shift in a reverse direction so as to adjust to an original signal, thereby generating the noise component of the received signal.

20.(previously presented): The noise canceling apparatus as claimed in claim 19, wherein the interpolation means include a circuit for inserting zero-points into the decimated signal, and further include a low-pass filter for making an interpolation bandwidth a transmission bandwidth.

21.(previously presented): The noise canceling apparatus as claimed in claim 20, wherein the low-pass filter includes a cos-squared filter for making the interpolation bandwidth a Nyquist bandwidth.

22.(previously presented):   The noise canceling apparatus as claimed in claim 20,

wherein the low-pass filter includes a cos filter for making the interpolation bandwidth a Nyquist

bandwidth.

23.(previously presented):   The noise canceling apparatus as claimed in claim 19,

wherein the means for performing the frequency shift include means for detecting a frequency

bandwidth, in which a noise frequency component is large, in the received signal so that the

amount of the frequency shift is automatically determined for the desired frequency bandwidth.

24.(previously presented):   The noise canceling apparatus as claimed in any one of

claims 14 to 16 wherein an automatic equalizer is further provided for removing an intersymbol

interference at a former or latter stage of a noise cancellation.

25.(previously presented):   The noise canceling apparatus as claimed in claim 19

wherein an automatic equalizer is further provided for removing an intersymbol interference at a

former or latter stage of a noise cancellation.

26. (new):   A noise canceling method comprising the steps of:

receiving a signal periodically including a zero-point,

establishing synchronization based on a received signal,

extracting the zero-point based on the established synchronization,

interpolating a noise component of the received signal by using the zero-point, and

subtracting the noise component from the received signal.

27. (new):   A noise canceling apparatus comprising:

means receiving a signal periodically including a zero-point,

means establishing synchronization based on a received signal,

means extracting the zero-point based on the established synchronization,

means interpolating a noise component of the received signal by using the zero-point, and

means subtracting the noise component from the received signal.